



**Amendments made in the application titled**  
**Direct Digital Frequency modulation / Phase modulation decoder**  
**Application number 10/696,408**

1. Page 5 line 7 added wording: or other methods
2. Page 5 line 8 wording changed to read:  
presentation of, instead of *information identifying*
3. Page 5 line 31 added paragraph reading:  
As frequency is a derivative of phase, as the change of phase with time  
$$f = \frac{d\phi}{dt}$$
, so is frequency modulation a derivative of phase modulation,  
wherein the modulating frequency is the variation in time of the phase of  
the modulating signal. Thus a demodulator for FM comprises of a  
demodulator of PM followed by a differentiator. The differentiation can be  
accomplished by subtracting the outputs of two averagers, one with a  
longer period of averaging representing the "long term" phase of the  
decoded signal, and the second averager with a much shorter period of  
averaging representing the instantaneous phase of the decoded signal.  
The output of the subtractor is the instantaneous change of the phase of  
the decoded signal and therefore the frequency of the decoded signal.
4. Page 10 line 33 through page 11, line 25, claims numbers 10 through 19  
have been stricken out.
5. Page 10 line 26, original claim number 20 became claim number 10.
6. Page 11 line 30 through page 12, line 13, claims numbers 21 through 27  
have been stricken out.
7. Page 12 line 14 and on, new claims 11 through 20 have been added.
8. Page 13 lines 4 through 8, the abstract has been replaced by the wording:  
The present invention provides a method and circuits for digital  
demodulation of Phase modulated signals using a direct digital phase  
digitizer to obtain the instantaneous phases of the modulated signal.  
Digital signal processing circuits comprising only of registers, adders and  
subtractors, but not multipliers or dividers, is used to extract the  
modulating signals from the instantaneous phase information derived from  
the modulated signal.  
The invention also shows how the PM demodulator can be extended to  
perform FM demodulation.